

Fig. 1

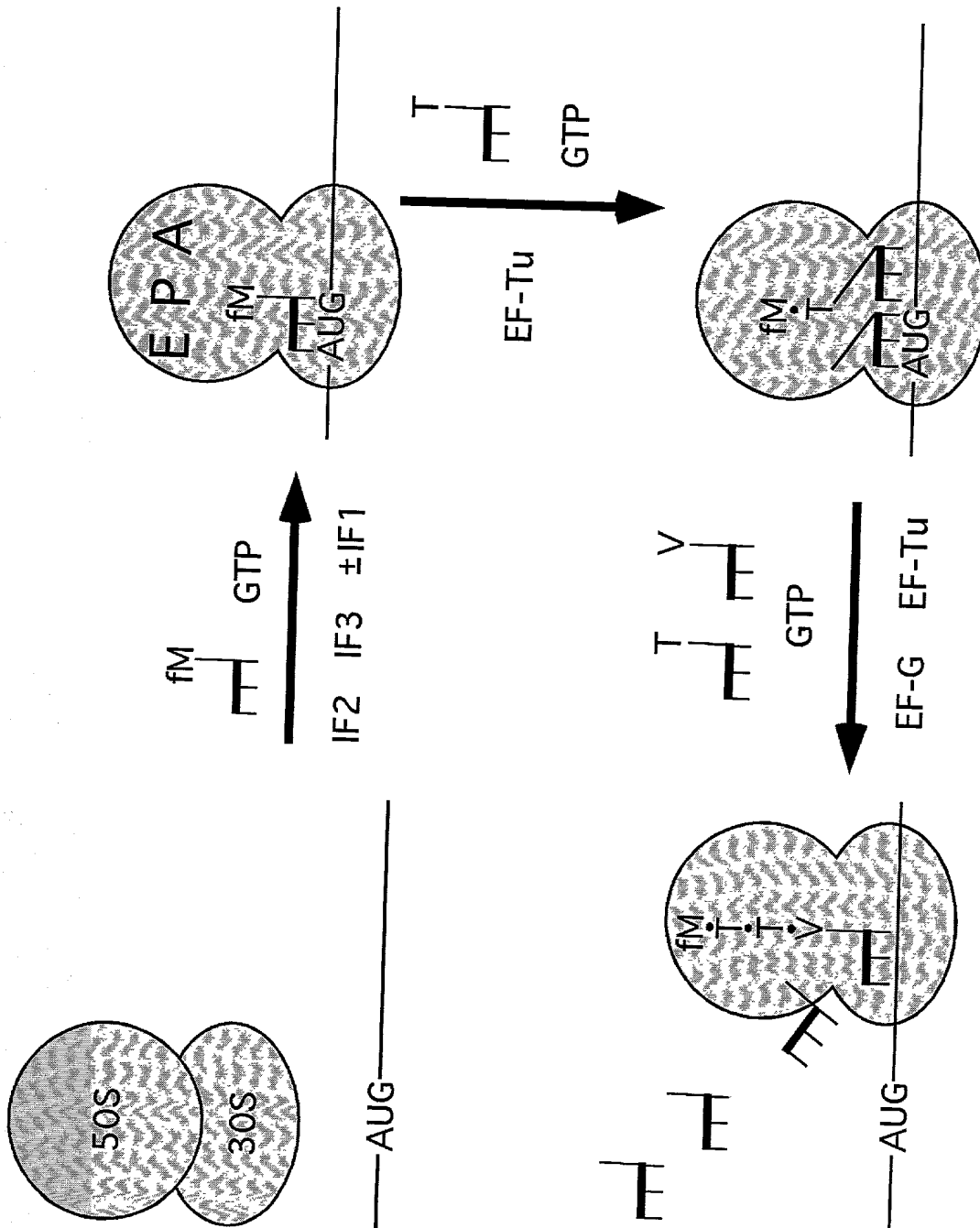


Fig. 2

205210" EB4500T

17 RNA pol. promoter

5' TAATACGACTCACTATAG 3'

|||||

3'

ATTATGCTGAGTGATATCCCAATTGAAATCATTCTCCATTTTTT

TAC TGG TGG CAA CTT AAG G 5'

mRNA MTTV

|||||

5' pppGGGUAAACUUUAGUAAAGGAGGUAAAAAA

AUG ACC ACC GUU GAA UUC C 3'

epsilon S-D

fM T T V

mRNA MTV

5' pppGGGUAAACUUUAGUAAAGGAGGUAAAAAA

AUG ACC GUU GAA UUC C 3'

fM T V

mRNA MV

5' pppGGGUAAACUUUAGUAAAGGAGGUAAAAAA

AUG GUU GAA UUC C 3'

fM V

mRNA MVT

5' pppGGGUAAACUUUAGUAAAGGAGGUAAAAACAC

AUG GUU ACC GAA UUC C 3'

fM V T

mRNA scramble-epsiMVT

5' pppGGGUAAUUAUACUUAAGGAGGUAAAAACAC

AUG GUU ACC GAA UUC C 3'

fM V T

mRNA ΔepsiMVT

5' pppGG-----GUAAGGAGGUAAAAACAC

AUG GUU ACC GAA UUC C 3'

fM V T

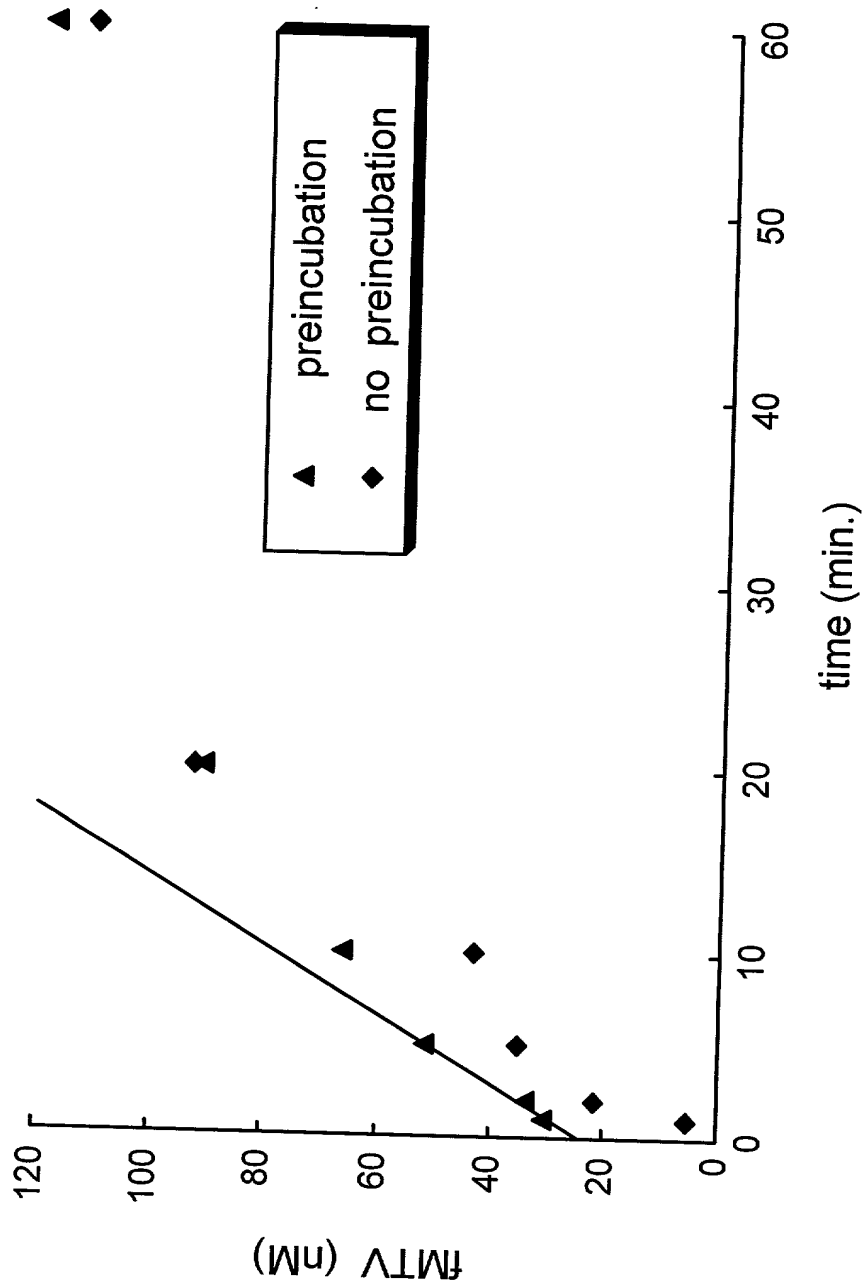
mRNA MTKV

5' pppGGGUAAACUUUAGUAAAGGAGGUAAAAACAC

AUG ACC AAA GUU GAA UU 3'

fM T bK V

Fig. 3

**Fig. 4**

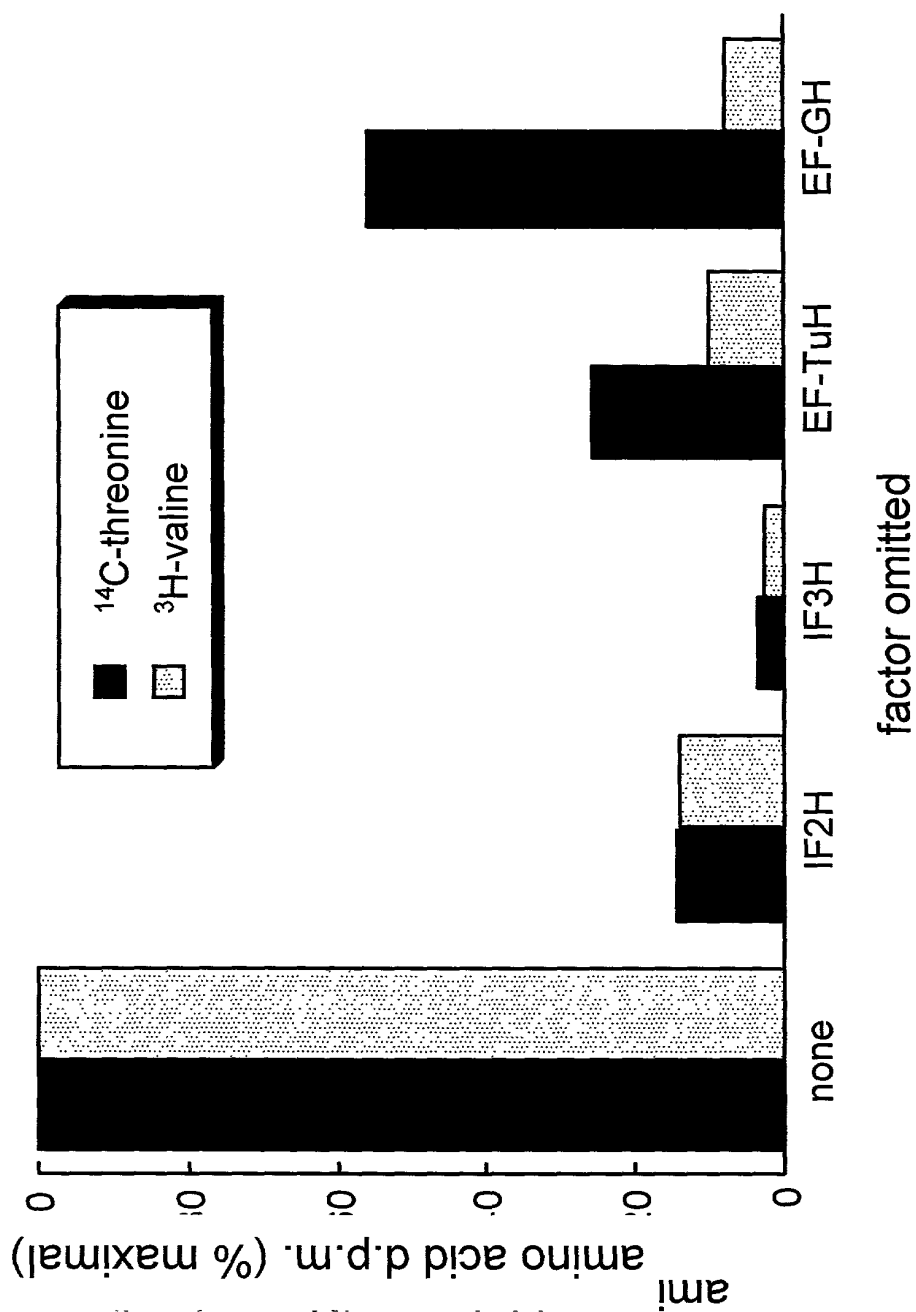


Fig. 5

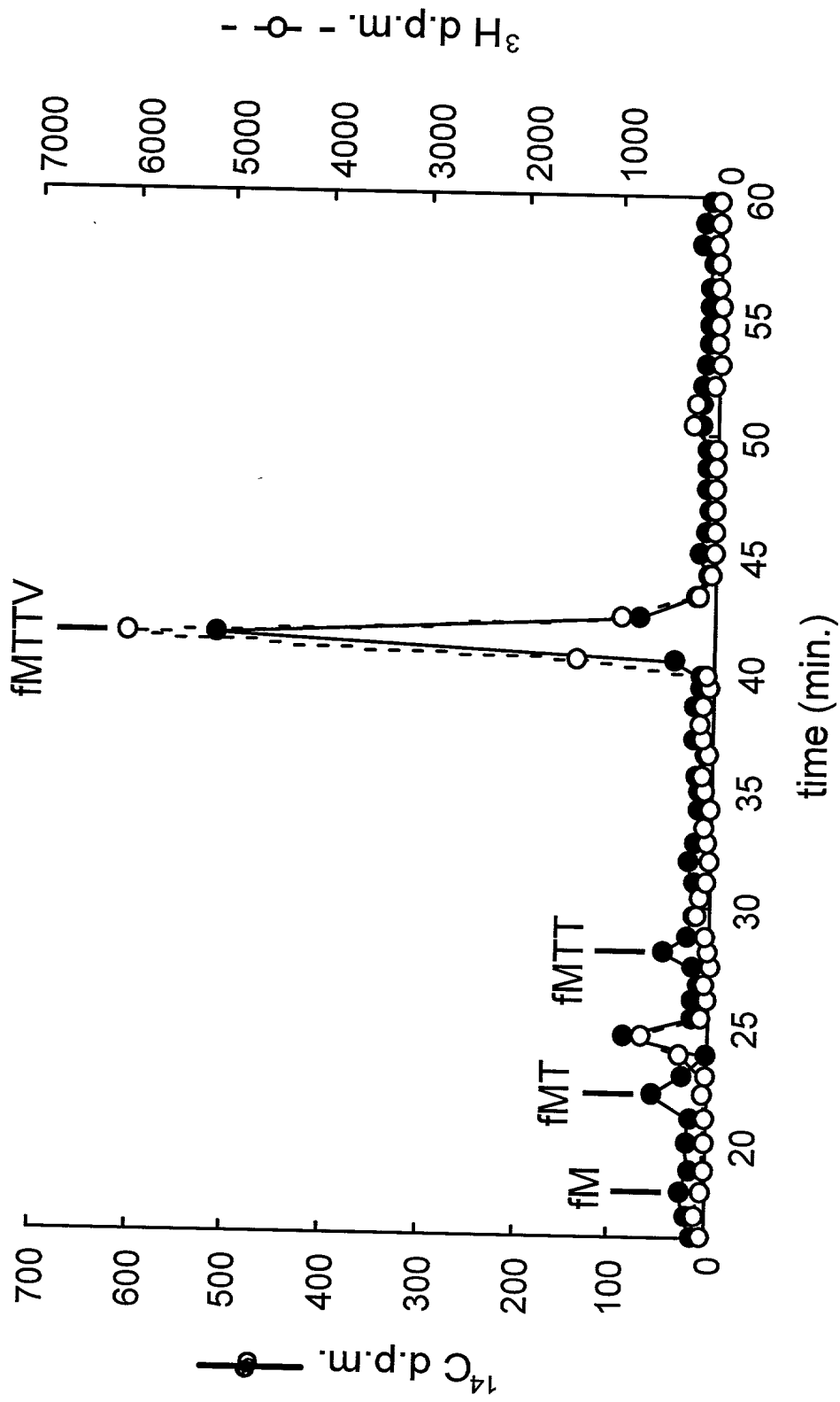


Fig. 6

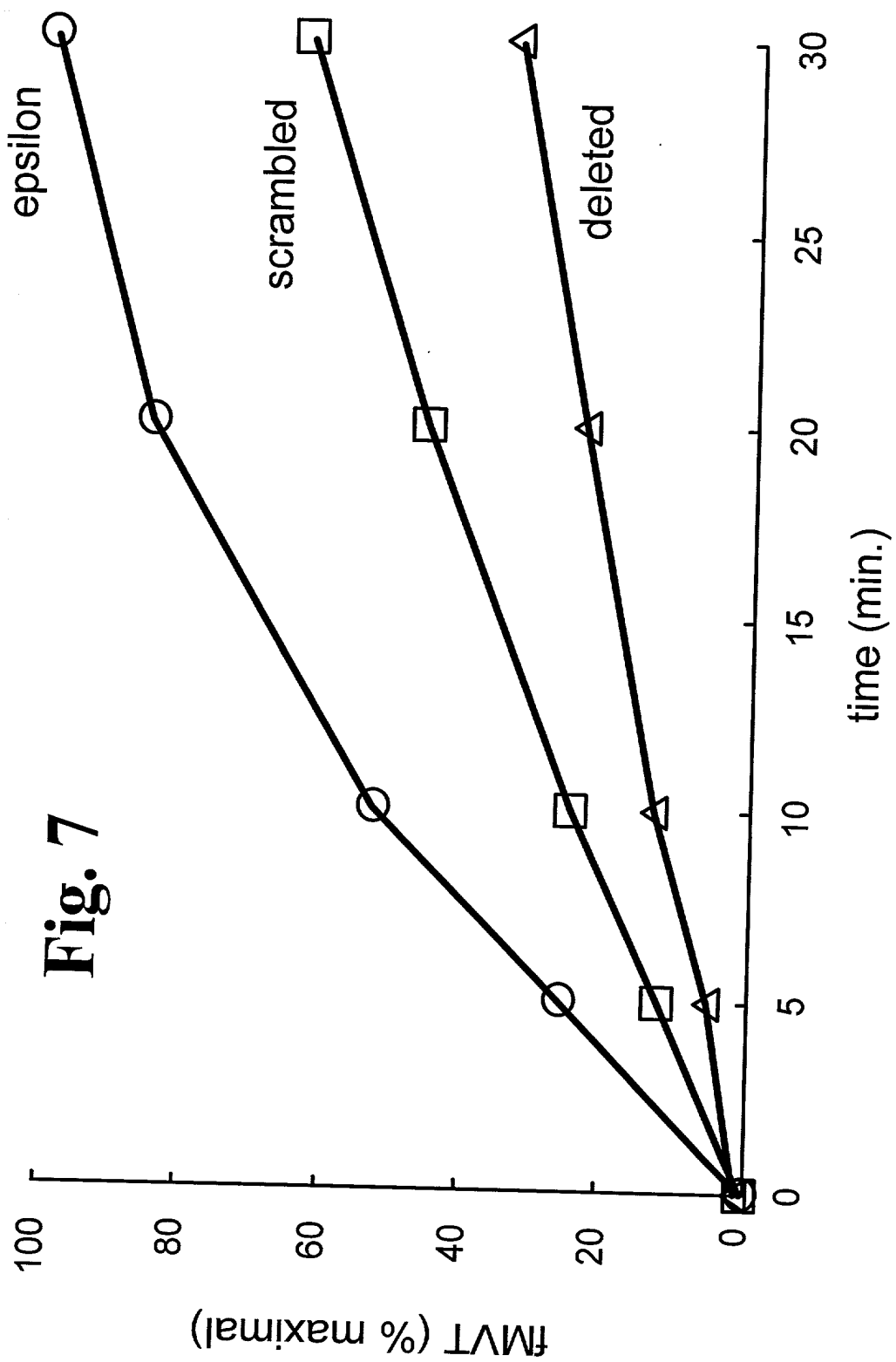
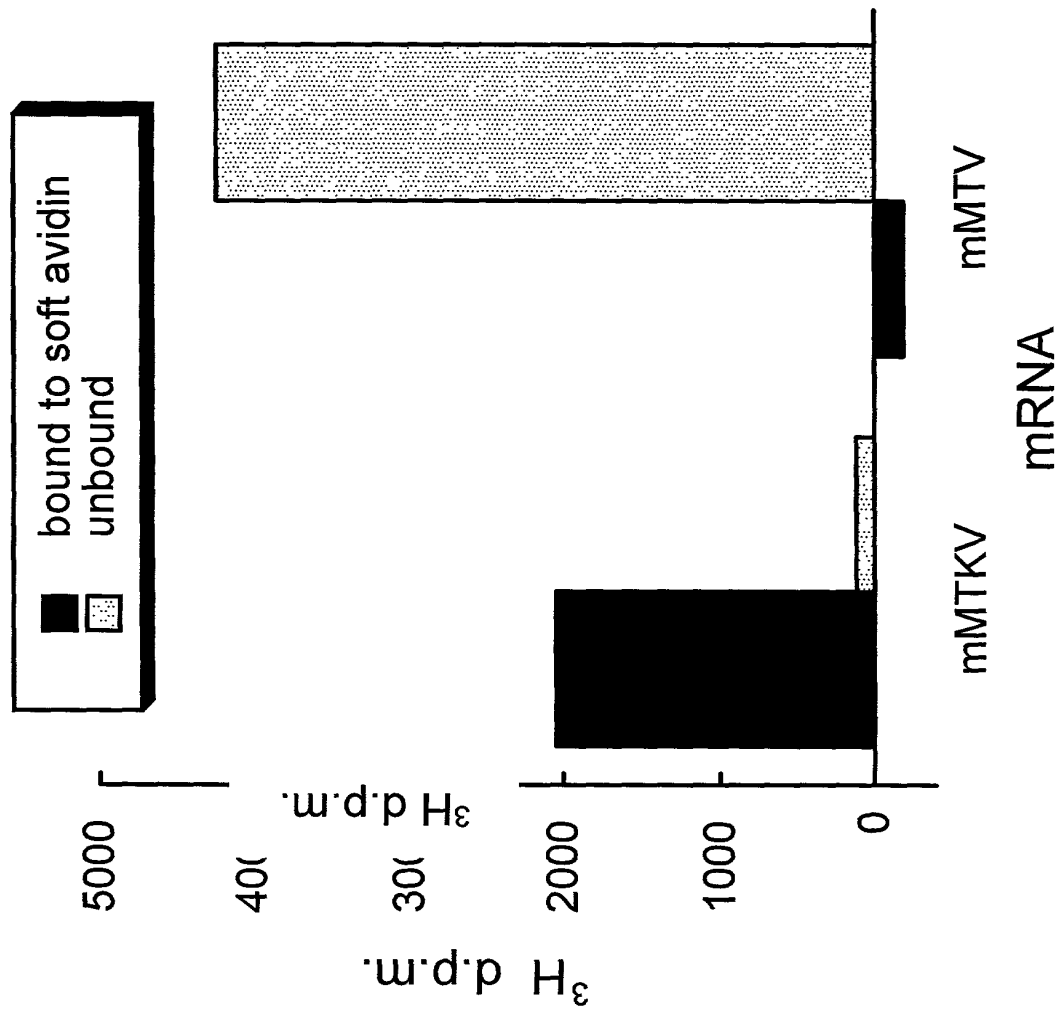
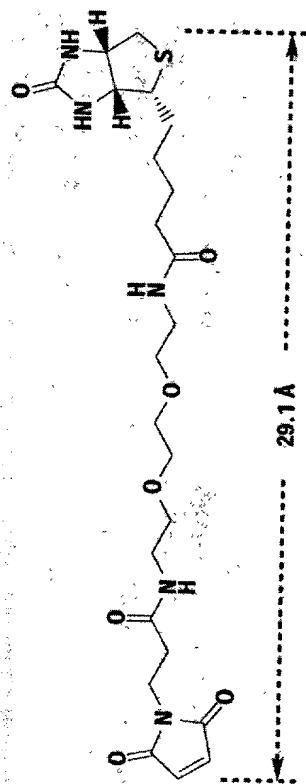


Fig. 8





Biotin-PEO-maleimide

Cys-S-

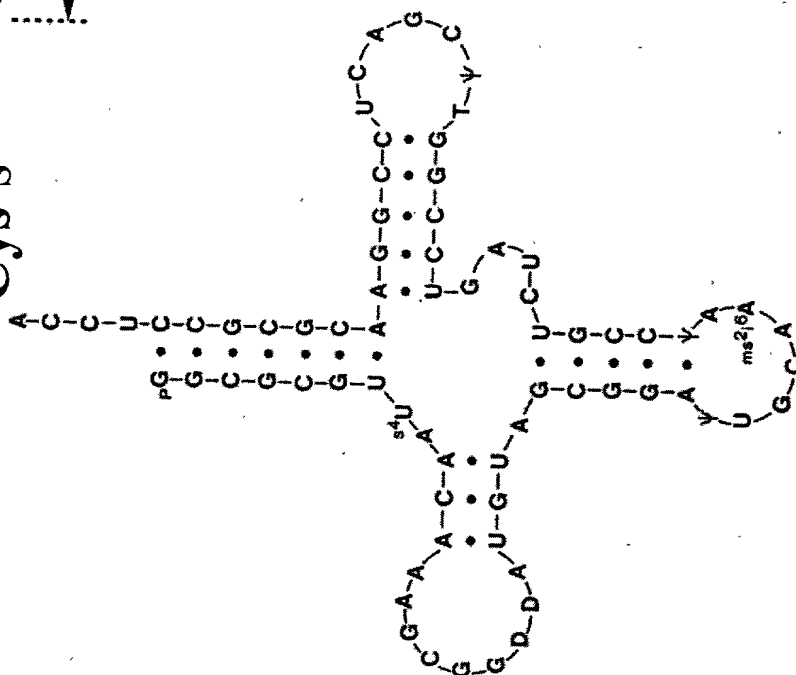


Fig. 9

205210" E842500F

tRNA^{Cys}

Cys-tRNA^{Cys}

Biotinyl ⁿ pH 6.0		Biotinyl ⁿ pH 6.9		Biotinyl ⁿ pH 6.0		Biotinyl ⁿ pH 6.9	
—	—	—	—	—	—	—	—
[- pH 8.8]		[- pH 8.8]		[- pH 8.8]		[- pH 8.8]	

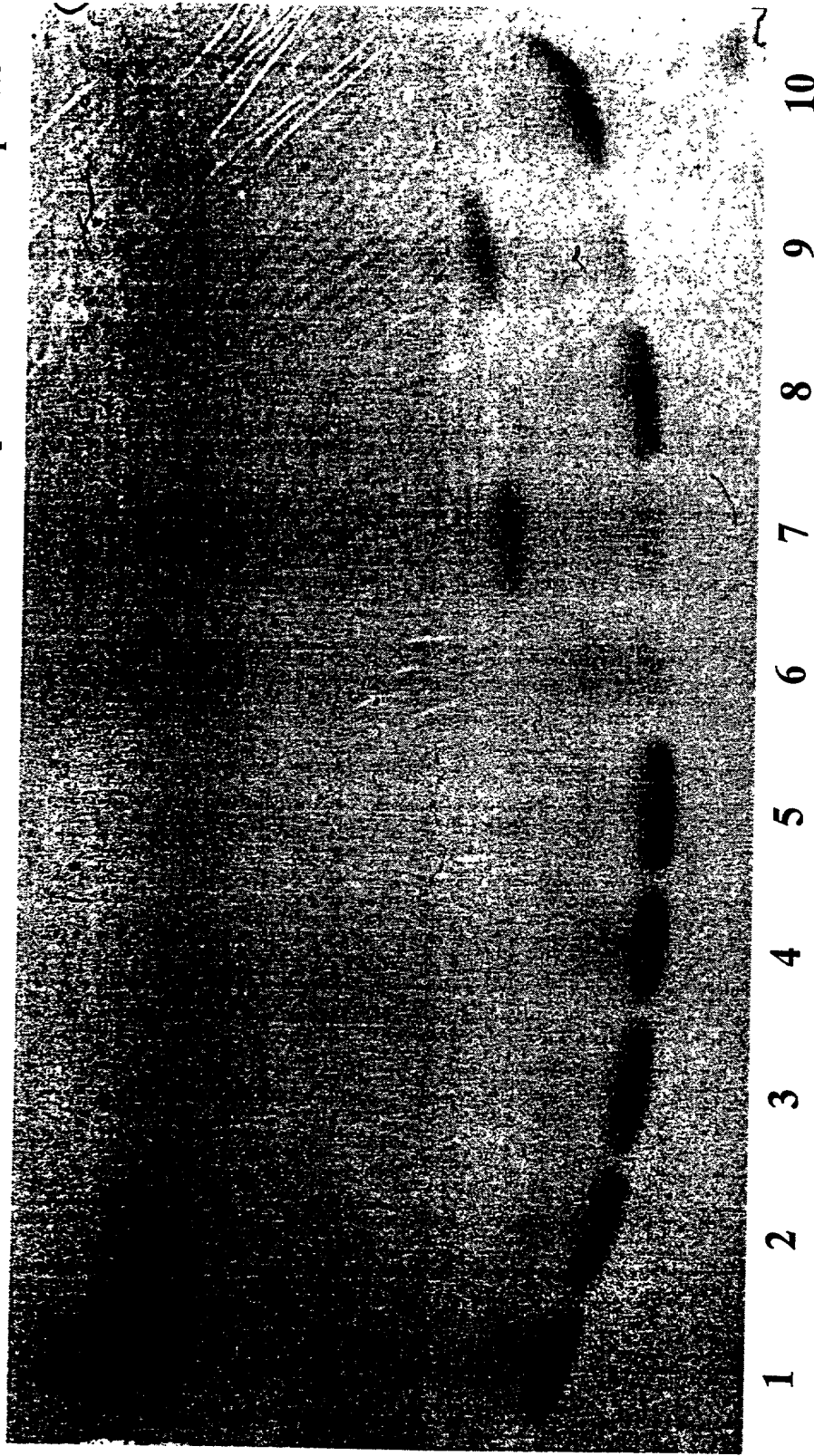
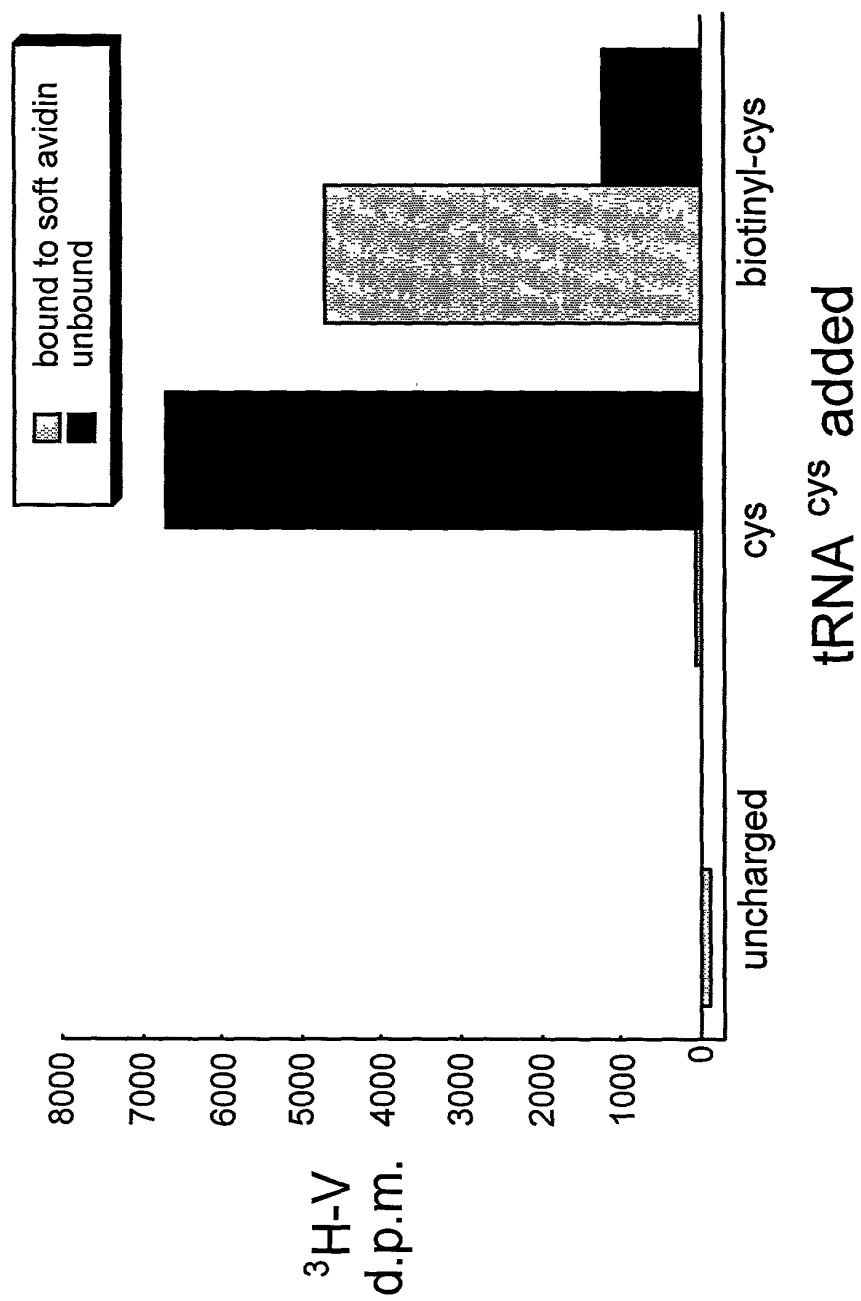


Fig. 10

Fig. 11

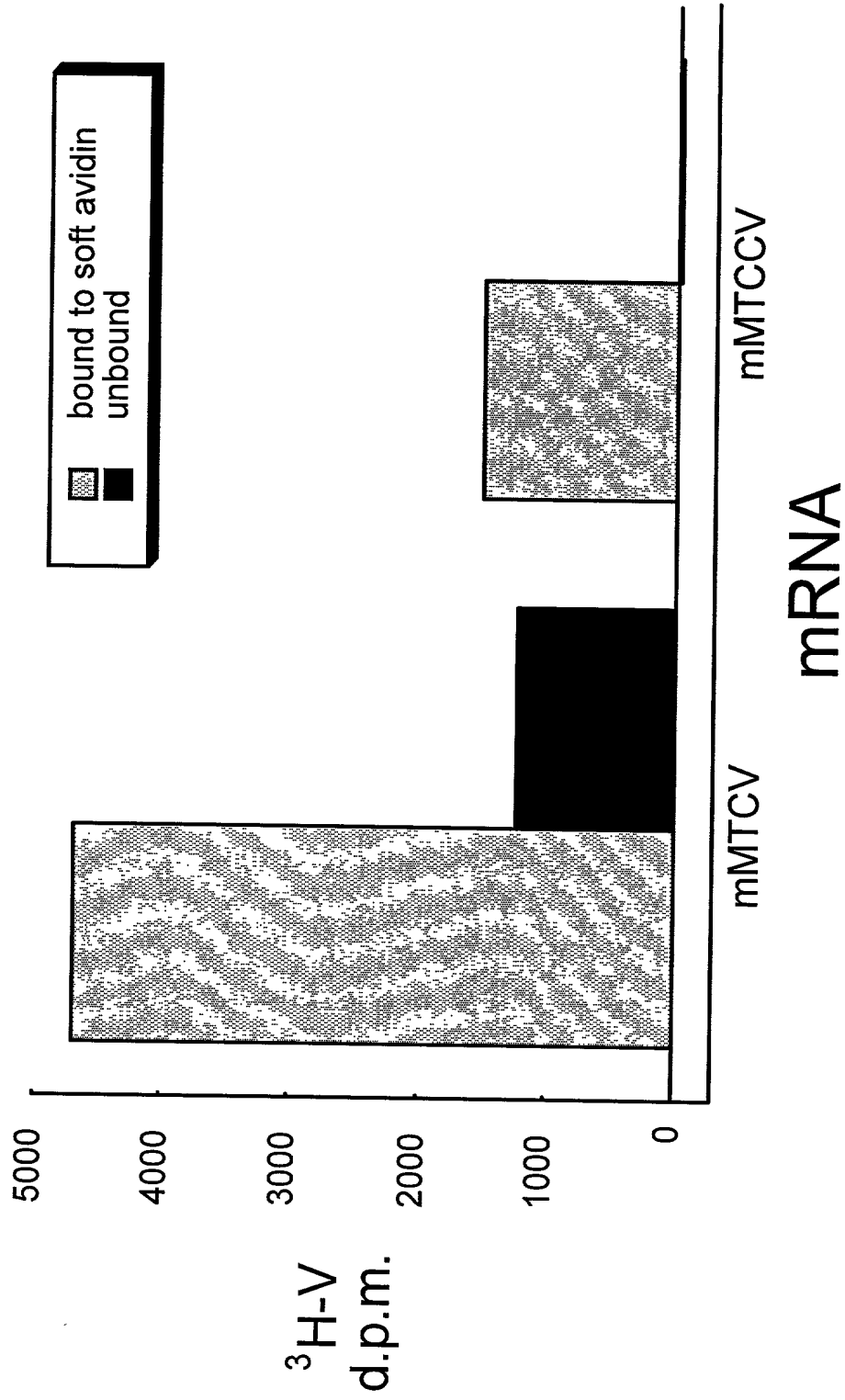
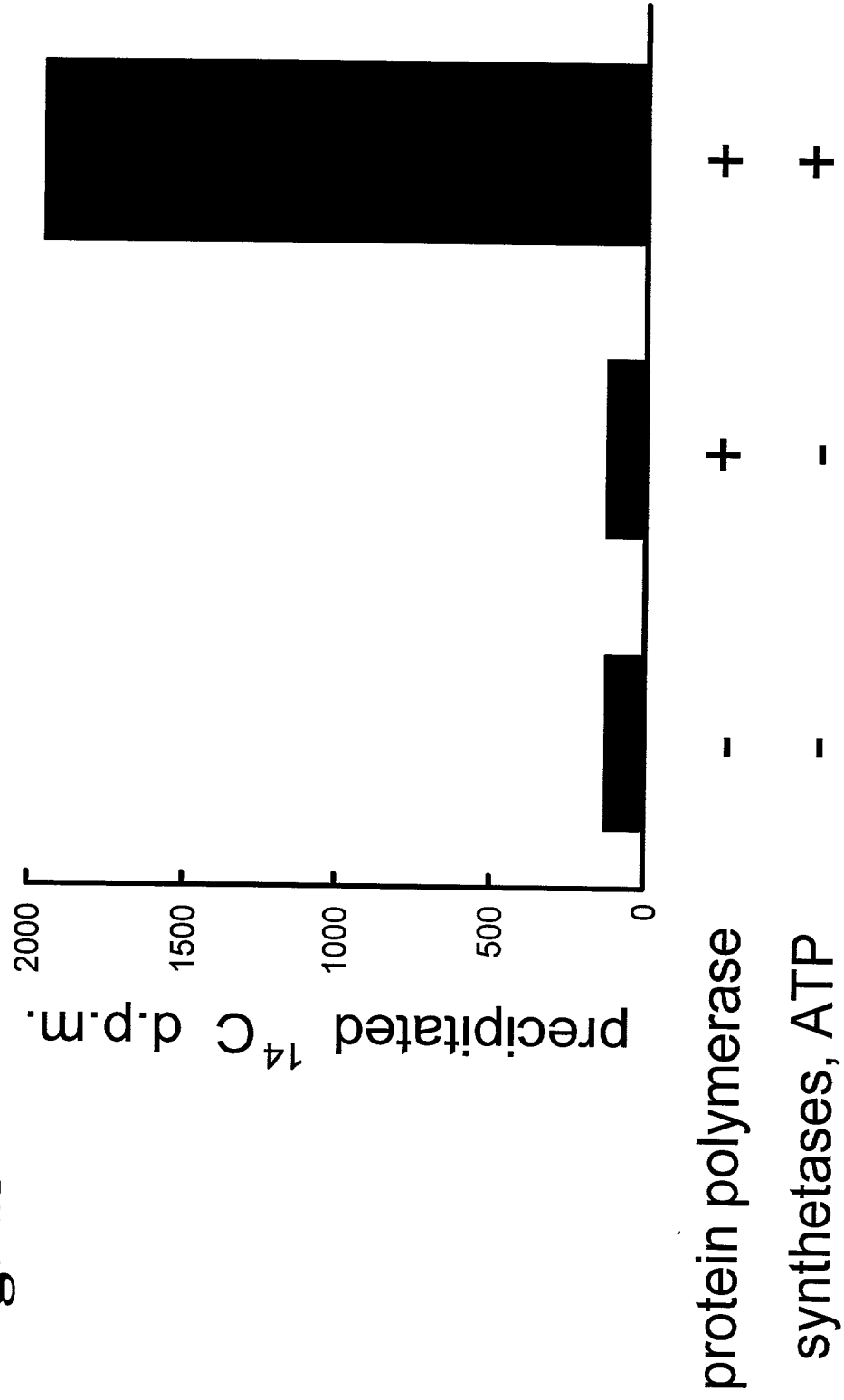
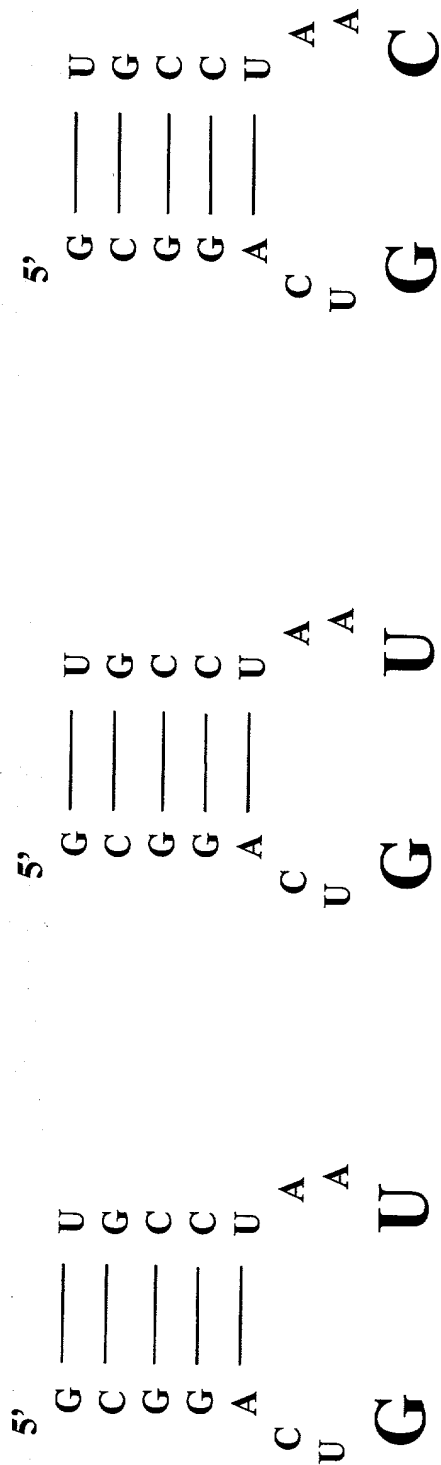


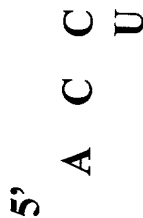
Fig. 12

Fig. 13



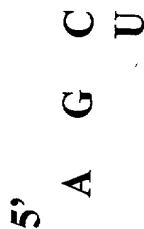


for



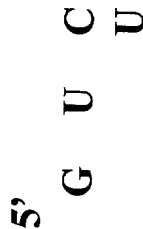
Unnatural amino acid 1
(was T)

for



Unnatural amino acid 2
(was S)

for



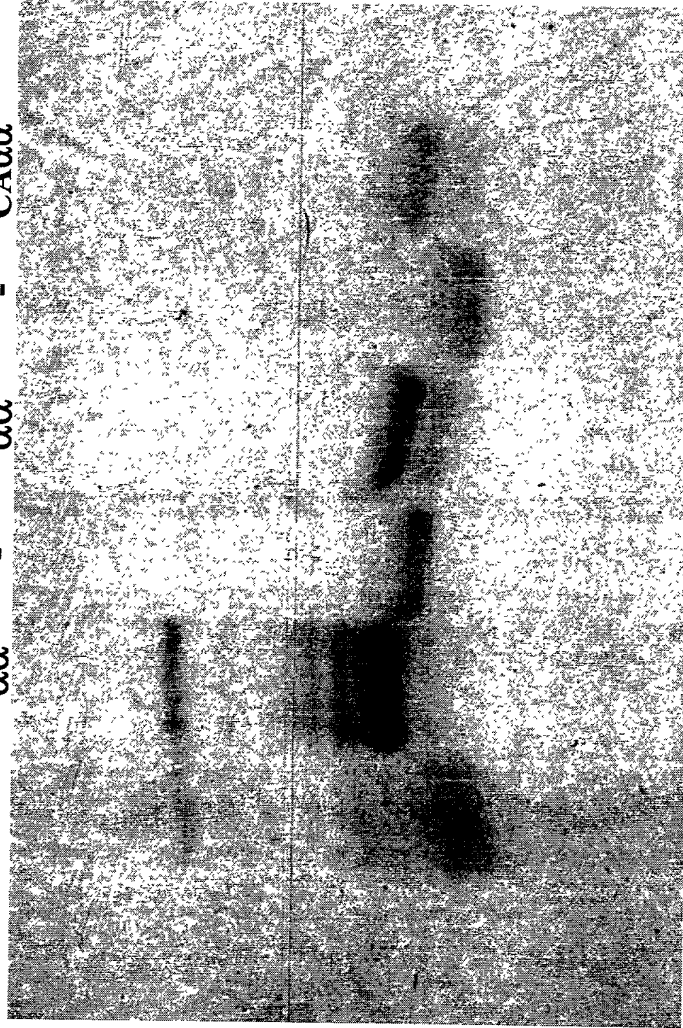
Unnatural amino acid 3
(was V)

Fig. 15

Fig. 16

Total tRNA tRNA₃^{Thr} tRNA-CA

- αα - αα - CAαα



1 2 3 4 5 6

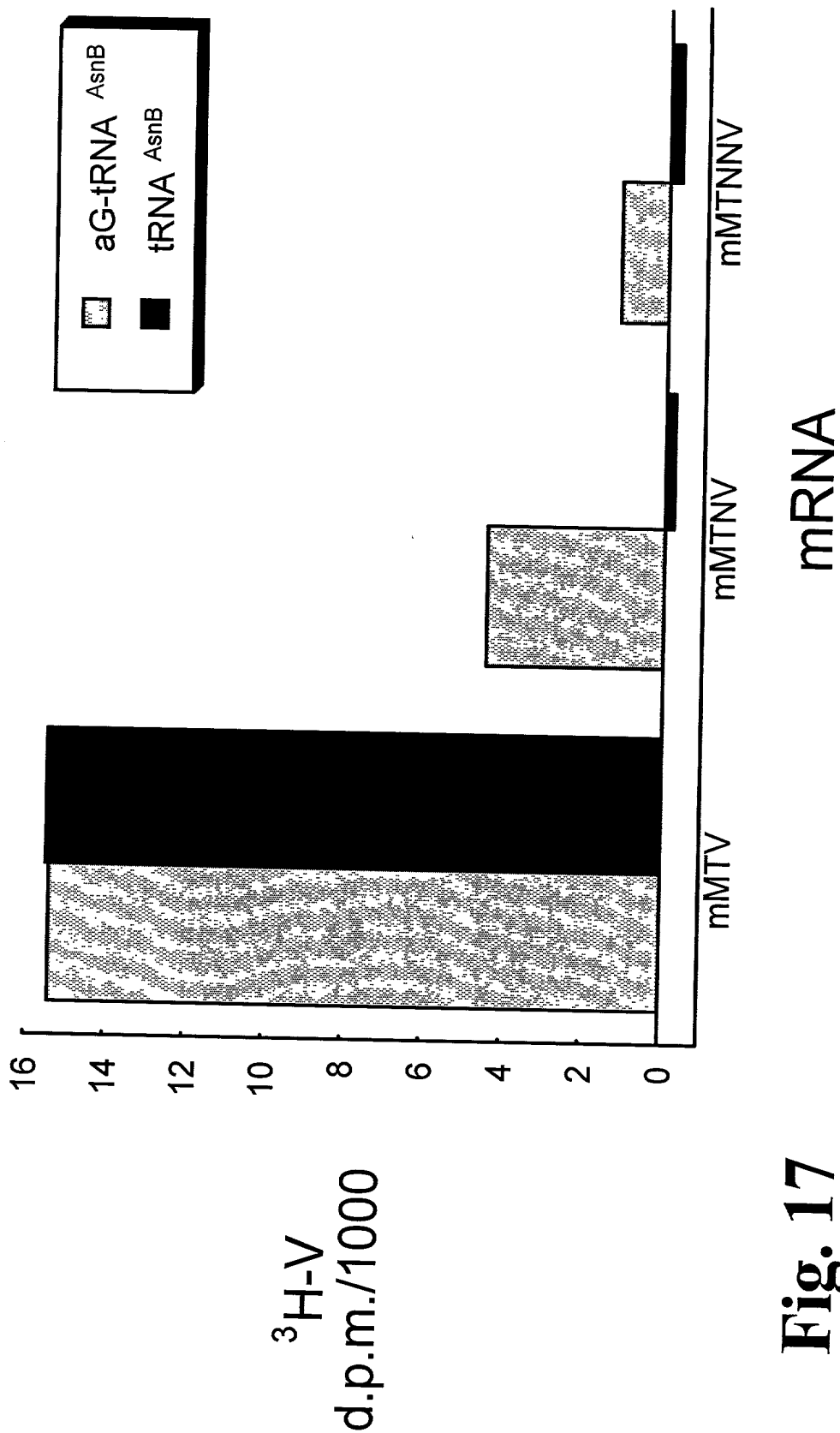


Fig. 17

DNA library



4. Amplification
via
mutagenic PCR



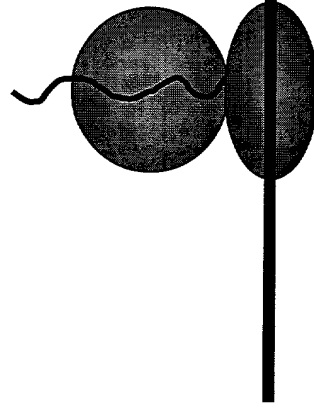
1. Amplification
via
transcription



mRNA



2. Translation



3. Selection



Fig. 18

mRNAs for $\text{fM}(\text{V}, \text{T})_n$

5' ppGGGUAAGUUAGUAAGGAGGUAACACAGUG (GUUACGGGACUGUAGUGUAGUACCGUACGUGACUGUUAACUACCGUUGG) "AUU 3'

fM(V,T)_n peptide products

13-mer
MNTVTVTVTVTV

21-mer

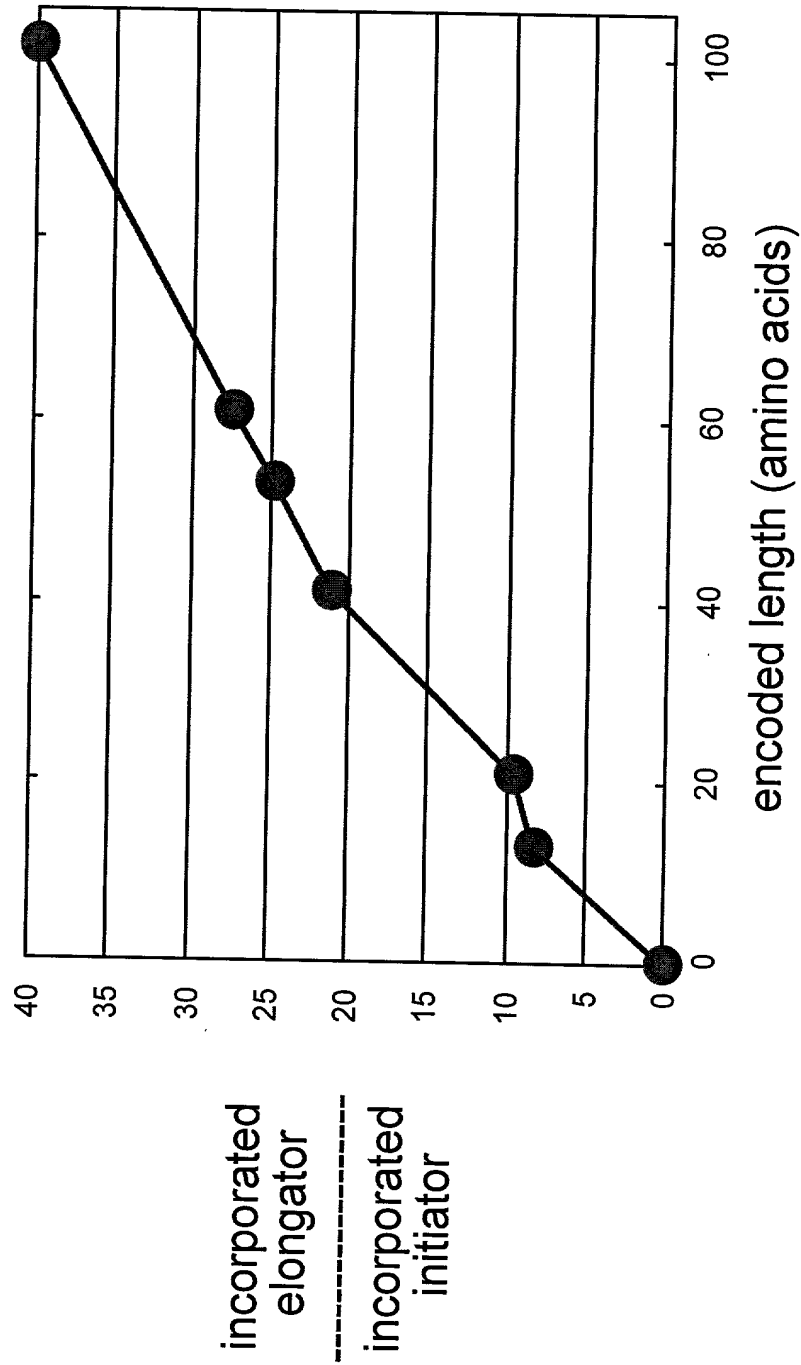
41 -1122

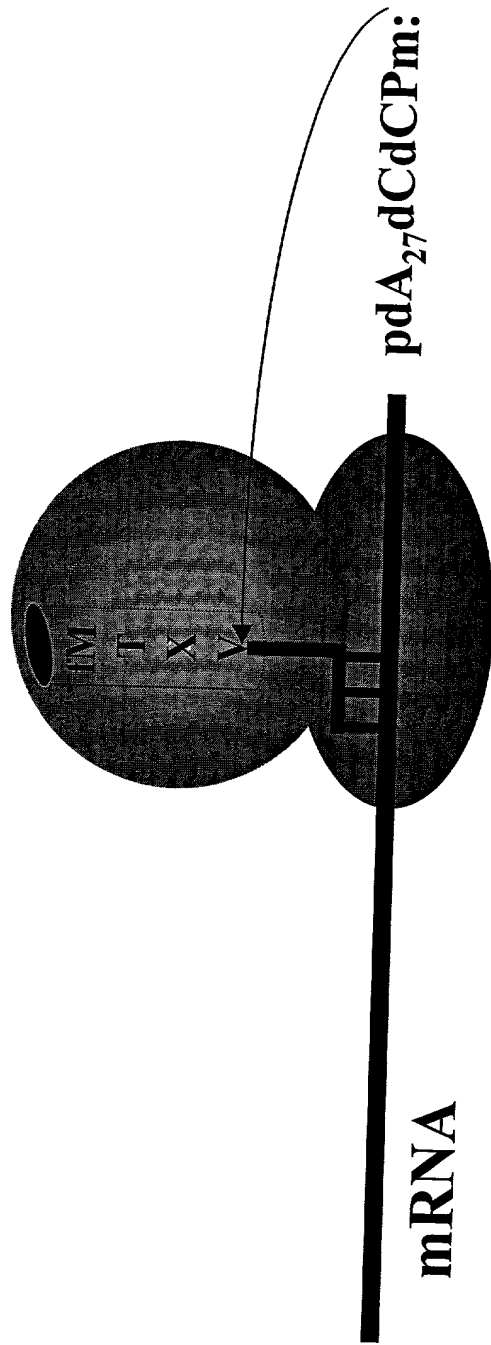
53 -mer

61-mer

101-101

Fig. 19

Fig. 20

**Fig. 21**

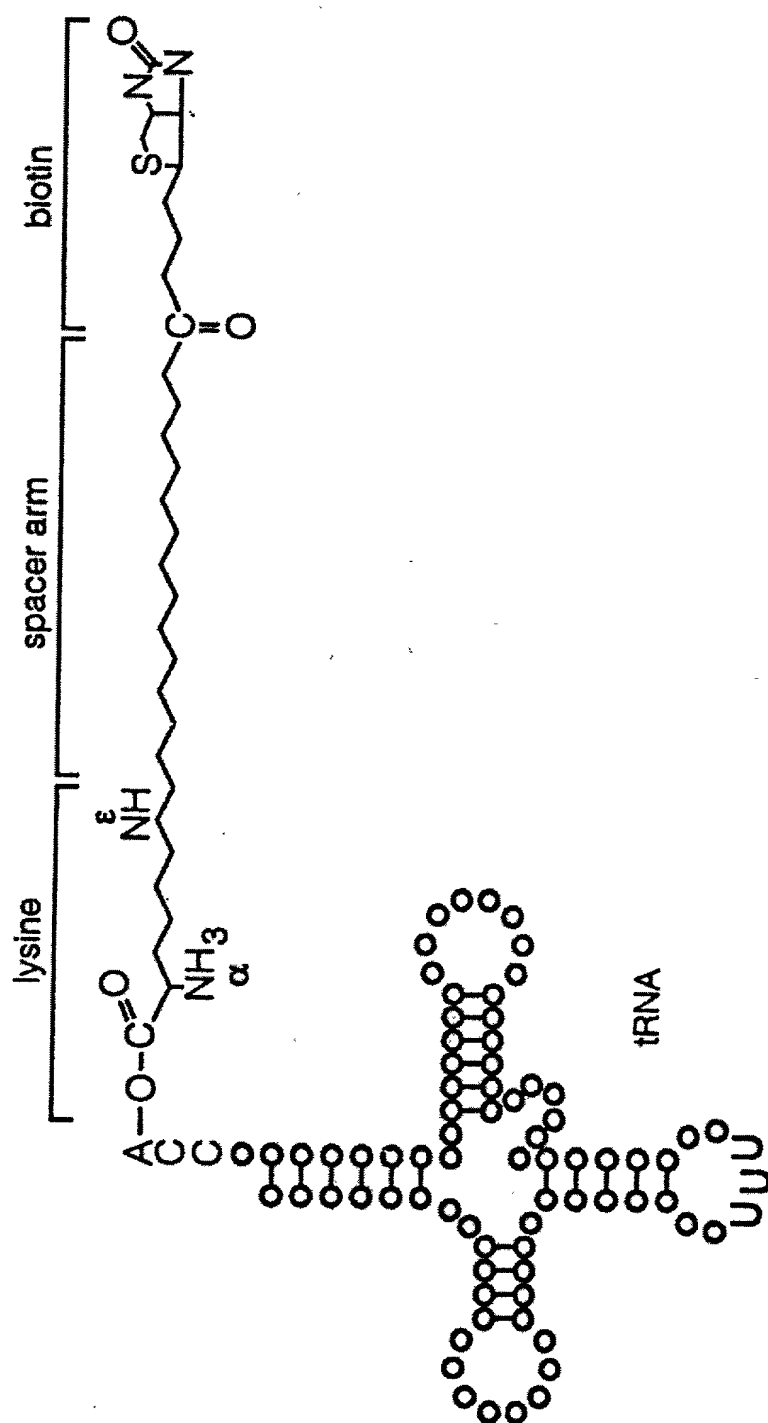


Fig. 22